

What is claimed is:

1. A method of data transmission, comprising:

generating a plurality of first digital signals;

digitally combining at least two of the first digital signals to create a first

5 combined digital signal;

converting the first combined digital signal to a first analog signal, the first
analog signal having a central frequency; and

shifting the central frequency of the first analog signal to create a transmittable
analog signal having a frequency suited for transmission along a desired transmission
10 medium.

2. The method according to Claim 1 further comprising:

generating a plurality of second digital signals;

digitally combining at least two of the second digital signals to create a second

15 combined digital signal;

converting the second combined digital signal to a second analog signal; and

combining the first analog signal and the second analog signal to create a
combined analog signal having a plurality of central frequencies, wherein shifting the
first analog signal central frequency comprises shifting the central frequencies of the
20 combined analog signal.

3. The method according to Claim 2 wherein digitally combining at least two of the first digital signals comprises multiplexing the first digital signals, wherein digitally combining at least two of the second digital signals comprises multiplexing the second digital signals.

5

4. The method according to Claim 3 further comprising modulating the first and second digital data signals.

5. The method according to Claim 4 further comprising:

10

filtering the first analog signal after converting to a first analog signal; and
filtering the second analog signal after converting to a second analog signal.

6. The method according to Claim 1 wherein the transmission medium comprises coaxial cable or fiber-optic cable.

15

7. The method according to Claim 1 further comprising:

transmitting the transmittable analog signal in a downstream direction.

8. A data transmission device, comprising:

a first digital combiner circuit having a plurality of digital inputs and a combined digital output, the first digital combiner circuit being adapted to combine a plurality of digital data signals and create a first combined digital data signal;

5 a first digital-to-analog converter (DAC) having an input and an analog output, the first DAC input being coupled to the combined digital output of the first digital combiner circuit, the first DAC being adapted to convert the first combined digital data signal to a first analog data signal; and

10 an up converter coupled to the first DAC analog output adapted to up convert the first analog data signal in preparation for transmission.

9. The data transmission device according to Claim 8, further comprising a plurality of modulators coupled to the first digital combiner circuit for modulating the digital data signals.

15 10. The data transmission device according to Claim 8 wherein the first digital combiner circuit comprises a multiplexer.

20 11. The data transmission device according to Claim 8 further comprising a filter coupled between the first digital-to-analog converter output and an input of the analog combiner circuit.

12. The data transmission device according to Claim 8 wherein the first analog data signal has a central frequency, wherein the up converter is adapted to shift the central frequency of the first analog data signal to create a transmittable analog signal having a frequency suited for transmission along a desired transmission medium.

13. The data transmission device according to Claim 8 further comprising:

a second digital combiner circuit having a plurality of digital inputs and a combined digital output, the second digital combiner circuit adapted to combine a plurality of digital data signals and create a second combined digital data signal;

5 a second digital-to-analog converter (DAC) having an input and an analog output, the second DAC input coupled to the combined digital output of the second digital combiner circuit, the second DAC being adapted to convert the second digital data signal to a second analog data signal; and

10 an analog combiner circuit having a plurality of inputs coupled to the first and second DAC analog outputs, the analog combiner circuit having an output coupled to the input of the up converter, the analog combiner circuit being adapted to combine the first and second analog data signals to create a combined analog signal, wherein the up converter is adapted to up convert the combined analog signal in preparation for transmission.

15 14. The data transmission device according to Claim 13 wherein the analog combiner circuit comprises a summer.

20 15. The data transmission device according to Claim 13 wherein the combined analog signal has a central frequency, wherein the up converter is adapted to shift the central frequency of the combined analog data signal to create a transmittable combined analog signal having a frequency suited for transmission along a desired transmission medium.

16. The data transmission device according to Claim 13 further comprising a first filter
coupled between the first DAC output and an input of the analog combiner circuit, and a
second filter coupled between the second DAC output and an input of the analog
5 combiner circuit.

17. The data transmission device according to Claim 8, further comprising a plurality
of modulators coupled to the second digital combiner circuit for modulating the digital
data signals.

18. The data transmission device according to Claim 8, wherein the device comprises a
headend of a cable TV network.

19. The data transmission device according to Claim 8, wherein the up converter is
adapted to generate a transmittable analog data signal, wherein the transmittable analog
15 data signal is transmittable across coaxial cable or fiber-optic cable.

20. A data transmission device, comprising:

a first digital combiner circuit having a plurality of digital inputs and a combined digital output, the first digital combiner circuit being adapted to combine a plurality of digital data signals and create a first combined digital data signal;

5 a first digital-to-analog converter (DAC) having an input and an analog output, the input being coupled to the combined digital output of the first digital combiner circuit, the first DAC being adapted to convert the first combined digital data signal to a first analog data signal;

10 a second digital combiner circuit having a plurality of digital inputs and a combined digital output, the second digital combiner circuit being adapted to combine a plurality of digital data signals and create a second combined digital data signal;

15 a second digital-to-analog converter (DAC) having an input and an analog output, the input being coupled to the combined digital output of the second digital combiner circuit, the second DAC being adapted to convert the second combined digital data signal to a second analog data signal;

20 an analog combiner circuit having a plurality of inputs and an output, the first DAC output coupled to an input of the analog combiner circuit, the second DAC output coupled to an input of the analog combiner circuit, the analog combiner circuit adapted to combine the first and second analog data signals to create a combined analog signal, the combined analog signal having a central frequency; and

an up converter having an input coupled to the output of the analog combiner circuit, wherein the up converter is adapted to shift the central frequency of the combined analog signal in preparation for transmission.

5 21. The data transmission device according to Claim 20, further comprising a plurality of modulators coupled to the first and second digital combiner circuits for modulating the digital data signals.

10 22. The data transmission device according to Claim 20 wherein the first and second digital combiner circuits comprise multiplexers, wherein the analog combiner circuit comprises a summer.

15 23. The data transmission device according to Claim 20 further comprising filters coupled between the first and second digital-to-analog converter outputs and the analog combiner circuit input.

24. The data transmission device according to Claim 20, wherein the device comprises a headend of a cable TV network.

20 25. The data transmission device according to Claim 20 wherein the up converter is adapted to generate a transmittable analog data signal, wherein the transmittable analog data signal is transmittable across coaxial cable or fiber-optic cable.

26. A data transmission device comprising:

means for combining a plurality of digital data signals to create a first combined digital data signal;

means for converting the first combined digital data signal to a first analog data signal, the first analog data signal having a central frequency; and

means for shifting the central frequency of the first analog signal to create a transmittable analog signal having a frequency suited for transmission along a desired transmission medium.

27. The data transmission device according to Claim 26, further comprising:

means for combining a plurality of digital data signals to create a second combined digital data signal;

means for converting the second combined digital data signal to a second analog data signal, the second analog data signal having a central frequency; and

means for combining the first and second analog data signals to create a combined analog data signal, wherein the means for shifting the central frequency of the first analog signal is adapted to shift the central frequency of the combined analog data signal to create a transmittable analog signal having a frequency suited for transmission along a desired transmission medium.